REMARKS

Claims 1, 3-7, 9-12, 14-18, and 20-22 are pending in this application. Claims 1, 10 and 12 have been amended to remove the objections noted by the Examiner. Claims 1 and 12 have been further amended.

Claims 1, 3-7, 12, and 14-18 were rejected under 35 USC §103(a) as being unpatentable over Shirata (US 2002/0008784 or 6,992,729) in view of by Kasson (U.S. Patent No. 5,450,216). Claims 9 and 20were rejected under 35 USC §103(a) as being unpatentable over Shirata (US 2002/0008784 or 6,992,729) in view of Kasson (U.S. Patent No. 5,450,216) and Gruzdev (US Patent 6,868,179). Claims 10 and 21 were rejected under 35 USC §103(a) as being unpatentable over Shirata (US 2002/0008784 or 6,992,729) and Kasson (U.S. Patent No. 5,450,216) in view of Moroney (U.S. Publication No. 2002/0186387). Claims 11 and 22 were rejected under 35 USC §103(a) as being unpatentable over Shirata (US 2002/0008784 or 6,992,729) in view of by Kasson (U.S. Patent No. 5,450,216) in view of Eschbach (U.S. Patent No. 6,342,951). Applicant respectfully disagrees.

Independent Claim 1, as amended, claims a luminance dynamic range system, comprising: an image processing module for transforming an input image into a luminance component L_{in} and chrominance components, C_1 and C_2; a spatial low pass filter, responsive to L_{in} for outputting a filtered luminance component L_f, wherein L_f is a function only of L_{in}, wherein the low pass filter is small enough that shadow regions are passed through as low luminance, and large enough to filter out detail in high-contrast regions; and a luminance compression module for gamut mapping that varies across different parts of the input image, spatially adapting the luminance compression function according to local image characteristics in such a manner as to preserve both shadow detail and overall image contrast, responsive to L_f and L_{in} for performing luminance compression on the input component L_{in} to output a compressed luminance signal L_{out} that is within an achievable luminance range of an output device; wherein the luminance compression module combines two compression functions $L_{comp1}(L_{in})$ and $L_{comp2}(L_{in})$ via a blending function $\alpha(L_f)$; wherein the function L_{comp1} is optimized for preserving overall

image contrast and the function L_{comp2} is optimized for preserving shadow detail; wherein $L_{comp1}(L_{in})$, $L_{comp2}(L_{in})$ and $\alpha(L_f)$ are all 1-dimensional functions only of L_{in}; and wherein $L_{comp1}(L_{in})$ and $L_{comp2}(L_{in})$ are both designed such that the overall compression function is spatially smooth and to map the luminance dynamic range of the input image to the more limited dynamic range of the output device. Independent claim 12 has been similarly amended.

Shirata et al. is directed to a video processing method that includes "dividing an entire input data region into three of first, second and third regions in order from the low level side thereof; setting, as an output data characteristic to input data, a trapezoidal characteristic which is nonlinear and continuous as a whole and consists of a linear portion in the first region where the gain is greater than one, a linear portion in the second region where the gain is equal to one exactly or approximately, and a linear portion in the third region where the gain is smaller than one; setting, as another output data characteristic to the input data, an S-shaped characteristic which is nonlinear and continuous as a whole and consists of linear portions in the first and third regions where the gain is smaller than one, and a linear portion in the second region where the gain is greater than one; selecting either the trapezoidal characteristic or the S-shaped characteristic; and correcting the digital luminance data in accordance with the selected characteristic. This method eliminates the known disadvantages and increases the luminance of a reproduced image while raising the contrast of its dark portion." See the Abstract of Shirata et al. In Shirata et al., only a single non-linear characteristic is selected to increase luminance of a reproduced image while raising the contrast of the dark portion. Only a single luminance compression function is selected.

In contrast, in Applicant's method, the luminance compression module includes a luminance compression algorithm for gamut mapping that varies across different parts of the image, spatially adapting the luminance compression function according to the local image characteristics in such a manner as to preserve both shadow detail and overall image contrast. This is accomplished by the use of two compression functions $L_{comp1}(L_{in})$ and $L_{comp2}(L_{in})$ wherein the function L_{comp1} (Figure 1) is optimized for preserving overall

image contrast and the function L_{comp2} (Figure 2) is optimized for preserving shadow detail. Nothing in Shirata et al. teaches or suggests Applicant's method which uses two luminance compression modules.

Nothing in Kasson, Eschbach, Moroney or Gruzdev overcomes the lack of teachings in Shirata et al.

No additional fee is believed to be required for this amendment; however, the undersigned Xerox Corporation attorney hereby authorizes the charging of any necessary fees, other than the issue fee, to Xerox Corporation Deposit Account No. 24-0025.

Reconsideration of this application and allowance thereof are earnestly solicited. In the event the Examiner considers a personal contact advantageous to the disposition of this case, the Examiner is requested to call the undersigned Attorney for Applicant, Jeannette Walder.

Respectfully submitted,

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